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Notes on the Yellow Tit *Parus holsti* of Taiwan with discovery of its nest

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The Yellow Tit *Parus holsti* is one of 14 species of birds endemic to the island of Taiwan (Severinghaus & Blackshaw 1976). It was discovered in 1894 by Seebohm's Swedish collector A. P. Holst (Seebohm 1895), and 57 years later Hachisuka & Udagawa (1951) wrote that its life history was still unknown. This paper presents information which has been gathered about the Yellow Tit since 1951, including the discovery of its nest.

Discovery of nests. The authors have observed Yellow Tits sporadically in the field since 1966, but it was not until 12 May 1976 that Chang found the first nest, and the next year 2 more on 15 April. As far as we know, these nests are the first ones reported.

The nests were found at 1250 m elevation in the hills of the Experimental Forest of National Taiwan University at Chitou, Nantou Co. (23° 30' N, 120° 30' E). The experimental forest covers 2488 hectares in the foothills of west central Taiwan. Two-thirds of this area has been cleared of its original hardwood vegetation and converted to plantations of conifers and bamboo. One-third of the area still remains as natural hardwood forest, and it was in these tracts of hardwoods that the three nests were found. Nests were not found in man-altered habitats.

The nests. One nest hole was 6 m above the ground in a 15 m high *Noto-phoebe konishi*, a large, uncommon hardwood, endemic to mountains in the central and southern parts of the island up to 2500 mm (Li 1963; Liu 1970). This same site was used in both the 1976 and 1977 breeding seasons, but we do not know whether it was occupied by the same pair. Dimensions of the nest cavity were as follows: hole diameter 11 cm, cavity depth 23 cm (from top of hole to bottom), cavity width 9 cm, depth of nest material 5 cm.

The other nest hole was 60 m away, 7.5 m above the ground in an *Actinodaphne musbaensis*, a common hardwood, endemic to mountain forests in the central part of the island (Li 1963; Liu 1970). Nest dimensions were not measured, but the hole appeared to be slightly smaller than the first. Nest materials at both sites were dried leaves (including bamboo leaves), lichens and moss, with some feathers in the cavity of the second site.

Eggs and young. The first nest discovered contained 3 young. On 13 May 1976, Chang observed the hole from 06.00 to 18.00 hours, during which 421 feeding trips were made to the nest by both parents. Greenish caterpillars were among the food items carried in. The young appeared to be 8–10 days old, which suggests that laying may have begun about mid-April. The next year (1977), Chang found 4 eggs on 15 April in this same nest cavity. One egg measured 17 mm x 12.5 mm. Another nest was discovered the same day with 3 eggs. The eggs were white with pinkish and brown splotches and streaks concentrated at the larger end. Dates of laying for these eggs are not known, but Chang observed the parents gathering nesting material on 1 April. Chang was unable to follow the nesting cycle through to completion in either case.

Species distribution. The first specimen of the Yellow Tit (a male) was collected by Holst on the "outlying spurs" of the Mt. Morrison (Yu Shan) range in central Taiwan (Seebohm 1895) and was described by Seebohm (1894). LaTouche (Ogilvie-Grant & LaTouche 1907) collected 3 specimens (males and females) in January and February 1906 at 6000 ft on the "Racu Racu Mts" (probably the range between Tung Pu Hot Springs and Patungkuan in Nantou Co.). Moltrecht collected a fifth specimen in the Alishan area (Chiayi Co.) in April 1907 (Ogilvie-Grant 1908). In summarizing what was known about the Yellow Tit in 1950, Hachisuka & Udagawa (1951) said that it was "confined to about 3,000 m" on Mts. Morrison and Ali (23° 30' N, 120° 50' E).

Our collective field experience indicates that the Yellow Tit is more widely distributed in the mountains than the above records suggest. We have seen them as far north as Mt. Lala (Taoyuan Co., 24° 43' N, 121° 25' E), as far south as Mt. Wutou (Pingtung Co., 22° 42' N, 120° 47' E), and in the mountains of the northeast near Ho Ping (Hualien Co., 24° 20' N, 121° 40' E).

All our observations of Yellow Tits have been made between 1000 and 2300 m. Chen & Yen (1973) listed it as low as 800 m (Sun Moon Lake) in March. Hachisuka & Udagawa's (1951) reference to its being confined to 3000 m is an unaccountable error.

Habitat. The Yellow Tit appears to prefer primary hardwood forests between 1000 and 2300 m. We have seen them occasionally in primary mixed forests and in open second growth. We have not seen them in pure coniferous forests, which would occur at the 3000 m contour mentioned by Hachisuka & Udagawa.

Behaviour. Yellow Tits travel singly, in pairs, or as members of mixed species foraging flocks of babblers, minivets, warblers, flowerpeckers, nuthatches, flycatchers, and other tits. Whereas a mixed flock may have a number of Green-backed Tits *Parus monticolus*, only rarely will there be more than two Yellow Tits. Yellow Tits tend to feed and move in the canopy and upper understory of the forest.

Status. The Yellow Tit may never have been common in Taiwan. Today it is a rare resident. It appears to be more numerous in the southern half of the island than in the northern half, and in the western half of the mountains than the eastern half.

Their scarcity appears to be partly related to the scarcity of their preferred habitat, the primary hardwood forests which are disappearing under forestry practices (Schultz 1970). The Yellow Tit is one of several passerines in Taiwan whose future may depend on the preservation of tracts of virgin hardwood forests.

The endemic Yellow Tit may also be facing competition from its sympatric and more numerous congener the Green-backed Tit. These 2 species are ecologically and behaviourally similar, and they may compete for both food and nest sites. The Green-backed Tit appears to be less specialized than the Yellow Tit and may, therefore, have a competitive advantage.

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Black Kites *Milvus migrans* in Sumatra

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Black Kites *Milvus migrans*, assumed to be of exclusively northern origin, now winter annually in the Malay Peninsula though numbers decline sharply south at least of 8° N. From field sightings Medway & Wells (1976) were able to provide slight evidence that occasional migrants cross to Indonesia. At the time we were unaware of a definite record but going over long-stored notes I find that on 13 and 14 April 1961 I saw single *M. migrans* (possibly the same individual) feeding with Brahminy Kites *Haliastur indus* at the mouth